

# EXECUTIVE SUMMARY

## SKOKIE SWIFT STATION LOCATION FEASIBILITY STUDY

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*Prepared for:*

**Village of Skokie**

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## EXECUTIVE SUMMARY

The Village of Skokie has undertaken the Skokie Swift Station Location Feasibility Study to determine the feasibility of adding intermediate station(s) along the existing Chicago Transit Authority (CTA) Skokie Swift (also known as the CTA Yellow Line) rapid transit service and the potential extension from the existing north terminus at Dempster Street to the vicinity of Old Orchard Road. This study analyzed whether these proposed stations would be a cost-effective means to increase transit ridership, provide better transit access to residents and employees of Skokie, and maximize previous and programmed investments in the Skokie Swift. This study was funded by a grant from the Regional Transportation Authority's (RTA) Regional Technical Assistance Program (RTAP). The Village of Skokie is the lead agency for the grant. The RTA, CTA and Pace provided technical review and concurrence on study products.

### **SUMMARY OF FINDINGS**

***Intermediate Stations*** - Several potential intermediate station sites were examined. Of these, only one is recommended to be carried forward toward implementation – a site on the north side of Oakton Street. This recommendation is based on a number of factors, including projected ridership demand, which is comparable to other suburban, intermediate stations on the CTA rail system, as well as this site's stronger long-term development potential, based on re-zoning of nearby areas and the pending Downtown Skokie 2020 Land Use Study. The Oakton Street location also has the best access to connecting bus routes.

The Oakton Street Station would serve primarily residents and businesses within a ½-mile radius of the site. The station would be pedestrian-oriented and be justified even without the construction of commuter parking lots or garages. Users would be walkers, people transferring to and from connecting buses, bicyclists and “kiss-and-ride” vehicular drop-offs and pick-ups. The station could be designed with entrances on both Oakton Street and Searle Parkway. A conservative estimate of the cost of designing and constructing a station at this location is \$18 million; however, this may be significantly reduced depending on the final design.

Of the five other sites examined, Crawford Avenue may also be feasible and worthy of additional future study. However, the Oakton site is superior for the reasons noted above.

***North Extension*** - A similar approach was taken with regard to the line extension, in that several alternative terminal locations/routings were considered. Of eight possibilities studied, three are recommended for further study. These are:

- Alternative A – remaining on the UPRR ROW to Old Orchard Road
- Alternative B – UPRR ROW to east of Edens Expressway to north of Niles North High School, terminating opposite Bloomingdale's store at the Old Orchard Shopping Center
- Alternative E – UPRR ROW to east of Edens, terminating at Old Orchard Road

No recommendation is made at this time if the extended line would be at-, below-, or above-grade or some combination of these for each of the three alternatives. However, this study does examine the benefits, constraints and costs of each.

A station in the Old Orchard area would serve residents, businesses, and institutions near the station and automobile commuters. The station would require construction of parking facilities to accommodate commuters from the Edens Expressway and the local area. There is already a regional bus transfer facility at Westfield Shoppingtown Old Orchard, and the new station could act as a new Intermodal transportation center. Depending on the route location, construction type and grade of the track, the cost of the extension, station and parking would range from \$154-\$289 million.

## **HISTORY**

The rail line that is today's Skokie Swift was constructed in the mid-1920s and the Chicago Rapid Transit (CRT) began operations on the line in March 1925. In 1926, interurban passenger trains of the Chicago North Shore & Milwaukee (CNS&M) began operating over the line. The Niles Center Branch of this era included several intermediate stations. Crawford, Kostner, Oakton, and Main each had a station, as well as several intersecting streets further to the east. The portion of the Niles Center line to the east of the CRT repair shops (near Hamlin Avenue) used third-rail electric power distribution, making it usable by all CRT (later CTA) cars. West of East Prairie Road, overhead catenary was used for electric power distribution.

In October 1947, the CTA took over CRT operations, including those on the Skokie line. In March 1948, a strike by operating employees of the CNS&M resulted in the suspension of the CTA's rapid transit service on the line. The rapid transit service was replaced by the CTA 97/Skokie bus route operating to/from Howard Street. All intermediate rail stations were abandoned at that time, with CNS&M trains operating non-stop between Howard and Dempster. In January 1963, the CNS&M ceased rail operations. The only train service on the line consisted of CTA non-revenue trains operating to/from the Skokie Shops.

The CTA, with assistance from the U.S. Department of Housing and Urban Development (HUD), determined that there was a market for express rapid transit service between Howard and Dempster Streets. The CTA received a HUD Demonstration Grant to rehabilitate the line, including new rapid transit cars and facilities, and to operate the service. The "Skokie Swift" service began operation in April 1964. The success of the service at the end of the two year demonstration program resulted in the line being retained as part of the CTA rail system.

In the early 1990s, considerable investment was made in the CTA Yellow Line/Skokie Swift. All ballasted track on the line was rebuilt in 1991. A new terminal station at Dempster Street was also constructed in 1992 and 1993, replacing the original 1964 facility. In 1993, all new dedicated rolling stock was placed in service, introducing modern, air-conditioned cars to the Yellow Line/Skokie Swift.

## **CURRENT OPERATIONS/OTHER AREA TRANSIT SERVICES**

Today, a total of ten 3200-series cars are assigned to the Yellow Line, with scheduled regularly scheduled operation between 4:52 a.m. and 10:26 p.m. each weekday. During the peak period, the two-car trains run as often as every seven minutes and during the base period service is provided every 12 minutes. Layovers at Howard Street are six to ten minutes, while the layover at Dempster Street is between five and eight minutes. Four trains are required for peak period service. One-way running time is eight minutes at all times for the approximately five mile trip.

The Yellow Line's most recent ridership results show a slight drop off from the 5,200 riders per day reported in the first and second quarter of 2002. The most recent CTA station entering traffic report (June 2003) showed 5,046 daily riders on the Yellow Line, down about 4% from the previous year.

Yellow Line riders generally had access to one or more vehicles in the household and more than half had annual household incomes level in excess of \$40,000. Over half of the riders use an automobile to access to a Yellow Line station while 17% walked. Trips to work and school activities comprise 88% of the Yellow Line riders.

Pursuant to an agreement with the Village of Skokie, the CTA is designing the replacement of the overhead catenary with third rail power distribution. This will make the entire Yellow Line compatible with all other CTA rail lines. When this change is made, likely during early 2004, the need for pantograph-equipped cars on the Yellow Line will be eliminated. This change will also make it possible to consider operation of Yellow Line trains through Howard Street to other points on the CTA rail system, such as downtown Chicago.

Other transit services in Skokie include nine Pace fixed route services (Routes 208, 210, 212, 215, 226, 250, 254, 422, and 626) and Pace demand-responsive accessible service for qualified users.

Two CTA bus routes (54A and 97) serve the study area. In addition to CTA and Pace, Greyhound intercity bus services also stop at the Dempster CTA station. The Greyhound office is open from 9:00 a.m. to 5:30 p.m. five days per week. Taxi companies (American, "303", etc.) have regularly staged cabs at the Dempster CTA station. Metra's Milwaukee District North Line has stations at Dempster and to the north of Golf Rd. The former, serving Morton Grove, is just about two miles from the Yellow Line Dempster terminal.

### **PHYSICAL CONDITION**

There are two existing stations on the CTA Yellow Line. The Howard Street terminal station is not included in this study, and would not be fundamentally changed as a result of the outcome of this study. The other station is the north terminal station at Dempster Street. This station opened in 1993 and is generally in good condition.

There is one structure on the portion of the Yellow Line affected by this study: the through-girder bridge that carries the line over Skokie Boulevard. However, this structure would not change as a result of this project.

The CTA audio-frequency cab signal equipment is in operation along the Yellow Line. The current equipment was installed in the mid-1970s, and is approaching the end of its service life. It is possible that this equipment could be replaced as part of the extension design project, or that it would be replaced as part of another CTA capital improvement project.

Cab signal speeds on the Yellow Line are currently 55 mph at most locations, with the exception of the Oakton curve (between the Oakton and Kostner grade crossings) where train speed is limited to 35 mph. When the third rail is installed, this restriction can be removed. The other speed restrictions on the line are on approach to and on exiting the Dempster terminal. If the line were to be extended, these restrictions could be removed, depending on alignment specifics and station location.

Another aspect of the signal installation on the Yellow Line is the grade crossing warning equipment. This consists of auto and pedestrian gates, motorman warning lights (indicating status of gate deployment to the operator of a train approaching the grade crossing) and the other equipment required for a complete, functional installation. There are a total of seven grade crossings on the CTA Yellow Line. Of these, East Prairie, Kostner and Searle are two-lane streets, while Crawford, Oakton, Main and Niles Center are four-lane streets or wider. Replacement of the grade crossing warning equipment is now underway, and is scheduled for completion in late 2003/early 2004.

Communications equipment on the Yellow Line includes copper cable hung from the catenary towers. Operations, maintenance and management employees are equipped with personal, portable radios. At present, there are no plans to replace this cable or change this method of operation.

Three traction power substations serve the Yellow Line. The Howard substation is located on CTA property at the Howard Yard site, and serves the Red and Purple Lines in addition to the Yellow Line. The Hamlin substation, put in service in 1999, is located on the CTA's Skokie Shops property, and supplies the Yellow Line in addition to serving the shop complex. The Skokie substation is east of Niles Center Road and north of the Yellow Line grade crossing. The rectifier-transformer equipment dates to the 1990s. The CTA has indicated that augmentation of the transformer equipment at Hamlin substation and the replacement of the transformers, rectifiers, getaways and battery charger at the Skokie substation are expected to begin during 2006 and end in 2009.

The present method of traction power distribution is third rail east of Crawford Avenue and overhead catenary from this point west. The section between Crawford and East Prairie is equipped with both overhead catenary and third rail, as this is where trains make the transition between the distribution modes. East of East Prairie the line is equipped only with third rail. All the third rail was renewed during the 1991 reconstruction of the ballasted track on the line. CTA has completed most of the preparatory work for the installation of the third rail power distribution equipment to replace the catenary on the northernmost 2.2 miles of the Yellow Line. Present CTA plans call for the third rail to be installed and activated during the Spring of 2004.

The design of the replacement third rail includes provision for a station on the north side of Oakton Street. Third rail through this location will be located to the outside of both tracks. At non-station locations, the third rail is normally located inboard of the tracks.

The CTA plans to retain the catenary towers even after the overhead wire is removed, since the towers support the communications cable. Other than at proposed station sites, retention of the towers has no immediate affect on this study. Removal of the towers (for example, on the north side of Oakton Street) would likely be done as part of the station site preparation. The cost estimate for the construction of this station includes an allowance for the removal of those catenary towers.

The Yellow Line track is in good condition, having been rebuilt in 1991. Extension of the line north of Dempster would require reconfiguration of the existing track, which ends in a single-track stub. This would be replaced by double-track. Realignment of the line through this section is also possible. The UPRR track north of Dempster is not considered suitable for re-use. The cost estimates for the line extension include the cost of new track over the entire length of the extension.

### **GRADE CROSSING ACCIDENT ANALYSIS**

The years 1999 and 2001 each had 26 reported accidents at the seven grade crossings on the Yellow Line, while there were 21 reported accidents at the crossings during 2000, for a total of 73 crashes. The average number of crashes per year is 24.

Of the at-grade crossings, Niles Center accounts for the most accidents with 27 reported during 1999-2001. Of these, 25 did not directly involve a CTA train. Half of the accidents directly involving a train occurred at this crossing during these three years. Oakton had the next highest number of reported accidents with 23 over the three years. None directly involved a train. Main had 13 of the reported accidents over this period. One accident directly involving a CTA train was recorded at this location. Five reported accidents occurred at Crawford, with none directly involving a CTA train. Searle had three reported accidents, one involving a CTA train and the only fatality among the reviewed reports. Finally, Kostner had two accidents, none of them directly involving a train.

### **UNION PACIFIC RAILROAD RIGHT-OF-WAY STATUS**

On May 7, 2002 the UPRR applied to the Surface Transportation Board (STB) to abandon the 1.04-mile portion of the Skokie Industrial Lead between Dempster and Oakton Streets in the Village of Skokie. The carrier also applied to discontinue operations on the 8.06-mile line section north from Dempster Street to Valley Junction in Northfield. A discontinuance means that the track, signal and other railroad equipment would remain in place, whereas an abandonment allows these items to be removed (and allows the right-of-way to be sold). The Village of Skokie submitted a letter to the STB, dated May 29, 2002, requesting "issuance of a Public Use Condition as well as a Certificate or Notice of Interim Trail Use rather than an outright abandonment" for that portion of the line between Dempster and Oakton Streets. The Village also asked that the carrier be prohibited from disposing of the corridor for a period of 180 days from the effective date of the abandonment authorization, in order to allow the Village to begin acquisition negotiations with the railroad. The STB granted these requests in 2002. The 180-day period expired, and the Village will send a letter to the railroad indicating that it does not have the funding to purchase the property at this time.

### **DEMOGRAPHIC CHARACTERISTICS**

According to the 2000 Census, the Village of Skokie had a population of 63,348, an increase of 6.6% from 1990. The median age of residents is 41.9 years, with more than 53% of the population between the ages of 20 and 64. The Village of Skokie is a mix of whites (68.9%), Asians (21.3%) and blacks (4.5%). There are more than 23,700 dwelling units, with 75% occupied by their owners and 25% rental property. The vacancy rate for dwelling units is 2.0%. The median household income (included retired individuals) is \$57,375. Of the employed population 16 years and older, 46.3% are in management, professional and related occupations, with 29.1% in office and sales occupations.

Total employment in Skokie is estimated to be 36,700 jobs. The largest employers in the Village of Skokie are Federal Mogul (1,700) and Rush North Shore Medial Center (1,400). The Westfield Old Orchard shopping mall, with its mix of large retailers, is estimated to have about 2,000 workers. Pharmacia, previously another large employer, has closed both employment locations in the village. Other large employers are: Niles Township High School (635); Anixter Brothers (600); Klein Tools (496); the Village of Skokie (492); Rand McNally (425); Castwell Products (314); and Ohmite Manufacturing Co. (300). The CTA Skokie Shops employ approximately 350 workers.

NIPC's current adopted forecasts for population and employment are for 2020, and were prepared as part of the development of the Chicago Area Transportation Study's (CATS) 2020 Regional Transportation Plan Update. NIPC is currently developing population and employment forecasts for 2030, as part of the development of the CATS 2030 Regional Transportation Plan. It is anticipated that the CATS 2030 Regional Transportation Plan and the NIPC's 2030 population and employment forecasts will be formally adopted by the region in late October/early November 2003. Preliminary NIPC 2030 population and employment forecasts were obtained from CATS for this study. It should be emphasized that the 2030 population and employment forecasts for Skokie are preliminary and subject to change until final adoption. It should be noted that the Village of Skokie has identified discrepancies in the NIPC forecasts and any subsequent analysis should include a thorough review and refinement of these forecasts. The 2020 and preliminary 2030 forecasts are shown below.

#### **Skokie Population, Households, and Employment Forecasts**

<b>Skokie</b>	<b>Population</b>	<b>Households</b>	<b>Employment (Estimated)</b>
2000 Census	63,350	23,220	36,700
2020 NIPC	61,990	24,720	57,620
Prelim. 2030 NIPC	59,480	23,680	44,820

#### **INTERMEDIATE STATION ANALYSIS**

Six potential alternative intermediate station sites were initially identified and assessed. These potential intermediate station sites included:

- McCormick Boulevard
- Hamlin Avenue
- East Prairie Road
- Crawford Avenue
- south of Oakton Street
- north of Oakton Street

The following table summarizes the analysis of potential intermediate station sites.

#### **Comparison of Intermediate Station Locations**

<b>Parameter</b>	<b>McCormick</b>	<b>Hamlin</b>	<b>East Prairie</b>	<b>Crawford</b>	<b>Oakton South</b>	<b>Oakton North</b>
520 feet of level, tangent track	Yes <sup>1</sup>	Yes	No	Yes	No	Yes
ROW width for 18 foot platform	Yes	Yes	Yes	Yes	Yes	Yes
Direct street access	Yes	No <sup>2</sup>	Yes	Yes	Yes	Yes
Zoning compatibility	Yes	Yes <sup>3</sup>	No	No	Yes	Yes
Direct intermodal connections <sup>4</sup>	No	No	No	Yes (1)	Yes (3)	Yes (3)
Off-street bus facility possible	No	No	No	No	No	No <sup>5</sup>

Park-and-ride/kiss-and-ride possible	No	No	No	No	No	No <sup>6</sup>
Major generators within half-mile (number)	Yes (5)	Yes (2)	Yes (2)	Yes (2)	Yes (2)	Yes (2)
2020 pop. & employ. within half-mile	7,950	6,870	6,870	6,870	10,550	10,550
Distance to Howard Street	2.0 miles	2.6 miles	2.8 miles	2.9 miles	3.9 miles	4.0 miles
Distance to Dempster Street	2.9 miles	2.3 miles	2.1 miles	2.0 miles	1.0 miles	0.9 miles
Recommended for further study	No	No	No	Yes	No	Yes

<sup>1</sup> Grade separation at McCormick will have substantial effect on station design and construction costs

<sup>2</sup> Must extend street from south of ROW; shop tail tracks are to north of rail line and can't be cut

<sup>3</sup> East side of Hamlin only

<sup>4</sup> Assumes no route diversions; number of routes are in parentheses

<sup>5</sup> Possible at Searle end of Oakton north, but route access would be difficult

<sup>6</sup> If a portion of Pharmacia parking structure becomes/is made available

As indicated in the table, there were a number of items reviewed prior to recommending further study of a potential station site. Based on the analysis of potential intermediate station sites, Oakton (north) and Crawford were recommended for more detailed study. Additional details developed included a ridership analysis and a review of right-of-way needs and availability.

For the ridership analysis, a 'boarding' is every time a person enters a transit vehicle. For right of way requirements, CTA length requirements include 180 feet for a station house plus 520 feet for an eight-car CTA train platform. Widthwise, the CTA indicated that an 18-foot center platform is sufficient for an at-grade station. Track requirements and clearance require an additional 24 feet, bringing the minimum right of way width at a station to 42 feet.

The following section discusses the advantages and disadvantages of the two intermediate station locations advanced for additional analysis.

### **Crawford Avenue**

The area around the Crawford station is almost exclusively single-family residential and is zoned 'R2' (single family residential). None of the Village's top 10 employers are located within walking distance of this location.

Considering CTA right of way requirements, the only suitable station location is to the west of Crawford Avenue. East of Crawford, the distance to the East Prairie grade crossing is insufficient for this length of platform plus station house. West of Crawford, a station house and a 520-foot platform brings the station area to just shy of Kedvale Avenue.

The overall CTA right-of-way width is approximately 150 feet, much more than the minimum 42 feet required. Opposite Kedvale Avenue, a ComEd substation is located to the south of the right-of-way, extending 39 feet into the CTA right-of-way. The north fence of this substation is approximately 23 feet removed from the adjacent track centerline. Com Ed high-tension towers are located along the north and south limits of the right-of-way, extending approximately 18 feet into the right-of-way, resulting in a separation distance of between 40 and 44 feet from the closest track center. Therefore, an 18' wide platform could be accommodated within the existing track center spacing at this location.

Although there is sufficient space for the station house and platform, there is not space for bus loading and unloading or a park-and-ride facility. A possible kiss-and-ride lane running parallel to the tracks could be routed between the eastbound (south track) and the ComEd high tension towers on the south side of the CTA right-of-way. This lane would be entered/exited off South Mulford. Kiss-



and-ride patrons would have to cross the eastbound track to get to the station house/platform if this concept were to be used. This arrangement and the lack of bus pull-offs for loading and unloading compromises both the safety and utility of the facility.

### **Oakton Street**

An Oakton Street station would serve downtown Skokie and area businesses, including two of the Village's top ten employers. The area is also highly commercial, making for an active environment for the proposed transit station. A five-story, 24-unit mixed use development now under construction at 4700 Oakton is within walking distance of the proposed station. Existing zoning is 'M2' (light industrial) along and immediately adjacent to the CTA tracks and 'B5' (downtown business district) either side of Oakton Street, west of the grade crossing.

The site has two potential constraints: the CTA track curves south of Oakton and the "Crafty Beaver" home improvement store and storage yard (immediately west of the CTA Yellow Line, north of Oakton) is an active business. Locating a station on a curve is not good design or operating practice, largely ruling out a location to the south of Oakton. North of Oakton the alignment is tangent. This section also has sufficient distance to the next grade crossing at Searle Parkway, which offers room for a station house and 520-foot long platform.

The "Crafty Beaver" store on the north side of Oakton may present a challenge. This facility currently affects street traffic patterns, as left turns out of the store can block westbound street traffic from clearing the grade crossing. Further, the store location impacts the ability to site any bus drop off or kiss-and-ride facilities immediately adjacent to the proposed station.

Track center spacing at Oakton Street was measured at 36 feet, widening out to 36 feet-10 inches within 330 feet of the crossing. This track center spacing is maintained up to the Searle Parkway grade crossing. At Searle Parkway, the overall CTA right-of-way width is 137 feet-6 inches. This track center spacing is sufficient to accommodate an 18-foot center platform, therefore conforming to CTA guidelines.

Providing a 4,320 sq. ft. station house (approximately 180 feet by 24 feet) set back from the north curb of Oakton Street and a 520-foot platform would mean that the north end of the platform would be approximately 850 feet north of Oakton Street. Searle Parkway is a further 250 feet, meaning that the station could also have an entrance at Searle Parkway. This arrangement would increase the capital cost of the station, but would increase access to the station for users located on Searle Parkway.

There are several existing installations that would need to be removed or relocated if a station were to be constructed at this location. A CTA signal relay house and grade crossing supply rack would have to be moved to accommodate the proposed station. These could be relocated to the east side of the right-of-way, set back far enough from Oakton in order to avoid affecting train operator, pedestrian or motorist sight lines. Also affected by a potential station is the CTA emergency crossover, located about 600 feet north of Oakton Street. This crossover would have to be removed to accommodate the station. It is possible this crossover could be rebuilt north of the Searle grade crossing.

The catenary towers to the north of Oakton should be removed to facilitate construction of the station. Removal of the catenary towers at the Oakton site will be made easier by the fact that third rail power distribution is already in design by the CTA. Although the towers are expected to remain in place, they would be carrying only the communications cables at the time that station design and implementation is likely to occur, but could be relocated to buried conduit through the station site. In addition, the CTA has indicated that their design for third rail power distribution at this location will put the power rails outboard of the two tracks, making implementation of an intermediate station at this location easier.

The provision of a bus stop near this station is an issue. One possibility would be to acquire the parcel on the southwest corner of Searle Parkway and Skokie Boulevard (practical only if the station has an entrance at Searle Parkway). Use of the UPRR Skokie industrial lead right-of-way north from Oakton Street as a bus circulation lane is a possibility. However, this would require that bus boarding



and drop off area be 175 feet west of the station site. This bus station location would require transferring riders to cross the driveways for the “Crafty Beaver”, which presents opportunities for conflicts between the pedestrians and vehicles.

Provision of kiss-and-ride and park-and-ride facilities at the Oakton site also requires further investigation. It is possible that the existing Village surface lots to the west of the proposed station site could be converted to parking structures, but these are some distance from the proposed station location. Another possibility is use of a portion of the existing Pharmacia parking structure (on the south side of Searle Parkway) for transit patrons. There may be some liability issues associated with such an arrangement; it is possible that the Village or CTA might have to purchase the structure outright or pursue other strategies, such as shared use.

### **Ridership Forecasts**

The 2030 ridership projections for the proposed Oakton station are 900 to 1,200 boardings per average weekday. The 2030 ridership projections for the proposed Crawford station are 600 to 900 boardings per average weekday. These intermediate station ridership projections assume Yellow Line service from Howard to Dempster. It is anticipated that the Dempster Street station would show a slight ridership decrease of approximately 5% to 10% with the implementation of a new intermediate station(s).

Given the lack of available park-and-ride facilities for the Oakton and Crawford stations, it is expected that the ridership would be less than is currently exhibited at Dempster (approximately 2,500 boardings per average weekday). Also, given the land use around the Oakton and Crawford stations, it is also reasonable that the Oakton station have a higher ridership projection than the Crawford station, with the Oakton station area having mixed use and higher development densities in its station area. In addition, the Oakton station would have a greater potential for attracting work trips, given the land use and zoning in the station area.

### **Vehicle Requirements**

Implementing either of the intermediate stations will add approximately one minute to the one-way travel time for a total of 9 minutes. This includes a 30-second dwell at the intermediate station, and would result in an average speed of 33.3 mph. Allowing five minutes layover at each end, the round trip time for each train would be 28 minutes in the peak. This would allow four trains to maintain the current peak period schedule; therefore, there would be no change over the current schedule requirements.

CTA's service standards allow a maximum of 90 riders per car before additional cars or trains are required. With either intermediate station, it is likely that boardings at Dempster will decrease slightly. With the Oakton station, an estimated total of 3,500 riders would enter the line's stations on a daily basis. At Crawford, an estimated total of 3,400 riders would board. If 40% of these trips are made in the morning peak period, the Oakton/Dempster combination would result in 1,400 riders, while the Crawford/Dempster combination would equal 1,360 riders. With the existing schedule, 19 southbound trips would operate through these stations in the AM peak. With a station at Oakton, the average load per train would be 74 riders, or 37 riders per car, while a station at Crawford would result in 72 riders per train, or 36 per car. Both will be within CTA guidelines, meaning that the existing service levels and load standards would be acceptable. Consequently, no additional vehicles are required over current line requirements with a new intermediate station.

**Comparison of Operating Plan Car Requirements**

<b>Operating Plan</b>	<b>Peak Car Requirements</b>	<b>Spare Cars</b>	<b>Spare Ratio</b>
Current	8	2	25%
With Intermediate Station	8	2	25%

## **Traction Power Requirements**

In discussions with CTA Traction Power engineers, implementation of a new intermediate station on the Yellow Line would, at a minimum, require that the equipment complement at either Hamlin or Skokie substation be improved according to the following changes:

- The Skokie substation would require considerable reconstruction and expansion (including the installation of a second 2500 kW unit).
- The Hamlin substation is a comparatively new facility (having been built and put into operation in the late 1990s). However, to support expanded Yellow Line service, it would require relocation of the DC switchgear to facilitate installation of a second 2500 kW unit.

The timing of the implementation of the potential intermediate station will determine how the costs for the improvement of the Hamlin and Skokie substations are allocated. If the intermediate station is not implemented in the short-term, it is likely that the improvements will be carried out as part of the CTA's on-going capital improvement program.

## **Conceptual Station Plans**

Design concepts were developed based on a potential station at Oakton Street. This station would be double-ended, providing an auxiliary entrance at Searle Parkway to provide more direct access for employers to the north of Oakton Street. The concepts are applicable to other stations as well.

## **Capital Costs**

CTA Station cost information was used as a baseline for estimation of capital costs. A range of CTA unit pricing information was examined. The August 2002 CTA input for a typical at-grade station lists a unit price of \$14 million. By contrast, using the CTA Engineering Condition Assessment (ECA) completed in early 1993 results in a typical station cost of \$5.7 million (2003 dollars). Some difference in unit pricing may be due to differences in materials and construction methods.

Using the CTA ECA cost data, the proposed Oakton intermediate station (with an auxiliary entrance at Searle) would cost approximately \$12 million and includes an expanded station length of 1,100 feet (vs. the minimum required 520 feet). Additionally, there are other costs associated with the construction of the Oakton station. A total of four ComEd high-tension towers and three ComEd wood poles will need to be relocated, with five catenary towers to be demolished at this site. The emergency crossover at Searle must be relocated to facilitate station construction. A total of \$4 million is estimated for this additional site work at the Oakton Station.

A third, independent assessment of the station design and construction costs was provided by DLK, Inc., the subconsultant on the study. For the Oakton Street facility, the DLK estimate was \$6.4 million, exclusive of the ComEd tower pole relocation and CTA emergency crossover removal/replacement. When those factors, along with the design/construction management allocation and the recommended contingency were included, the projected total cost for the Oakton Station would be around \$11.3 million. This is within 20% of the unit price proposed by CTA, but this estimate includes additional site-specific items, which were not included in the CTA station unit price input.

In addition to construction costs, a design/construction management allocation of 16% of the total construction price, and a recommended contingency allowance of 30% were included in the station area costs.

As a worst-case scenario, the \$14 million at-grade station unit price provided by CTA with the additional \$4 million in additional site-specific requirements is used for a total estimate of \$18 million. The \$14 million cost estimate was also used for the proposed Crawford intermediate station.

### Conservative Capital Cost Estimates Crawford and Oakton Intermediate Stations

Cost Element	Crawford Station	Oakton Station
Construction cost	\$7.6 million	\$9.7 million
16% design and construction management allocation	\$2.2 million	\$2.9 million
30% contingency	\$4.2 million	\$5.4 million
Total design/construction	\$14 million	\$18 million

### Operating & Maintenance Costs

The CTA 2001 Rail Cost Model enumerated costs per station day and costs per car mile. For station costs, an estimate of \$1,128.67 (2001 dollars) included the customer assistant, station appearance and security costs. Escalating this by 4% per year to 2003 dollars, the station cost per day would now be around \$1,220.

For service 250 weekdays per year, the annual cost would be \$305,000. For a full year's service (365 days), the total annual outlay would be \$445,300.

### Intermediate Station Evaluation and Recommendation

Based on the additional analysis for these stations, it is recommended that the proposed intermediate station at Oakton Street be advanced toward implementation, with the proposed Crawford Avenue station dropped from further consideration. The development potential at Oakton Street is greater than at Crawford Avenue. Furthermore, the ridership projections for the two stations indicate that the Oakton station would have slightly stronger demand, and greater integration with other transit services. These intermediate station recommendation factors are discussed below.

The table below compares the results of the factors evaluated for the Oakton and Crawford intermediate stations.

#### Comparison of Oakton and Crawford

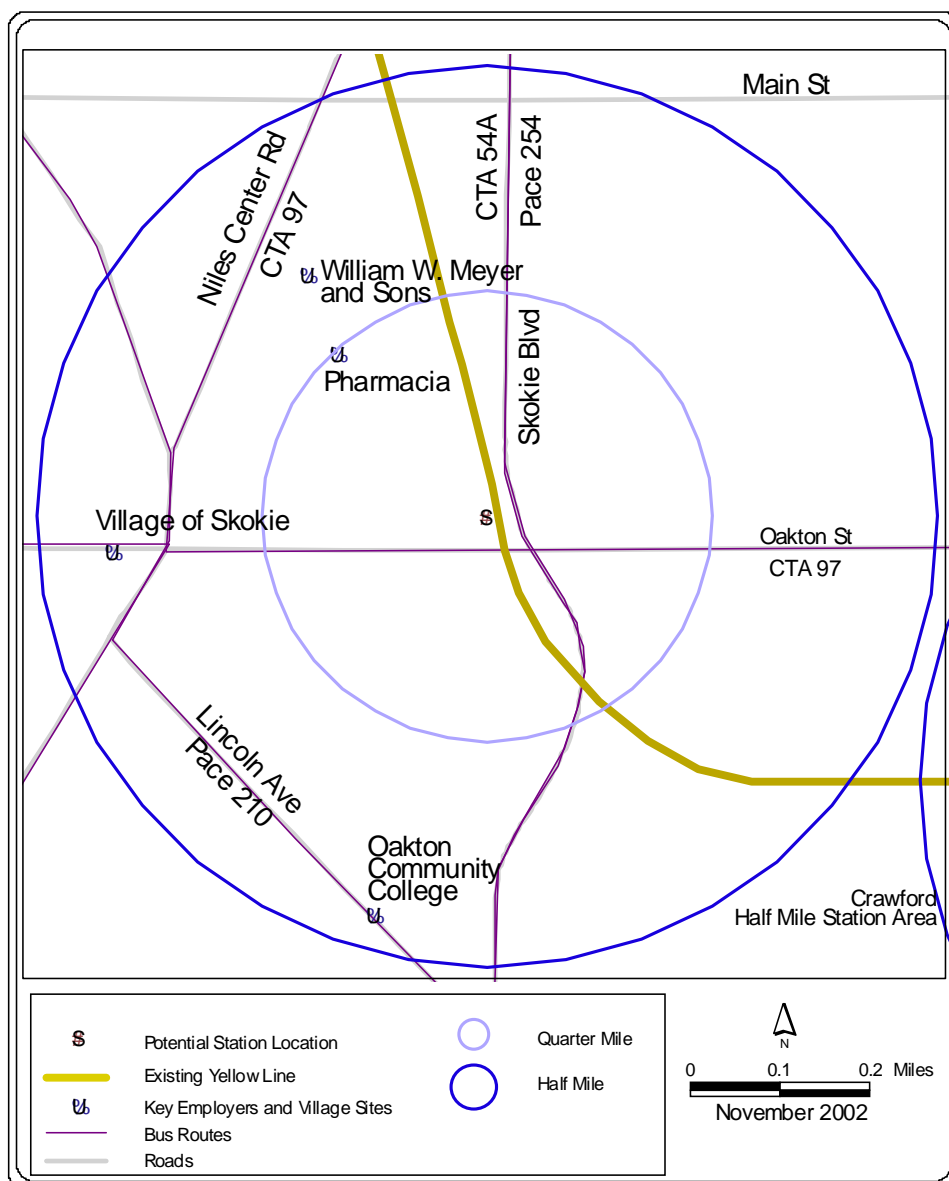
Evaluation Factor	Oakton	Crawford	Remarks
Service/operations impacts	Additional running time required	Additional running time required	Both stations are equal
Connections to other transit service	97, 54A and 254 bus routes	Pace route 215	Oakton is superior in terms of connections
Proximity to traffic generators	Four major employers within one-half mile	One major employer within one-half mile	Oakton is superior
Access considerations	Signals and crosswalks exist east and west of Oakton. Other studies may improve situation	No signalized intersections in close proximity. Access paths across Crawford required.	Oakton is currently in a more favorable situation. Pending studies may lead to further improvements.
Capital costs	\$8M-\$18M	\$4M-\$14M	Possible to lower capital cost at Oakton
O&M costs	+\$0.3M annual	+\$0.3M annual	Both stations are equal
Potential ridership	900-1,200 boardings	600-900 boardings	Oakton is superior
Development potential	Zoning and current developments favor higher density	Completely surrounded by single-family zoning	Oakton has greater long-term potential
Congestion impacts	ADT = 18,000 (1998)	ADT = 14,100 (1998)	Oakton is in a more congested area
Land use/compatibility	Zoning and neighborhood are favorable	Zoning is entirely single-family residential	Both are suitable for station site; Oakton is more favorable

Safety aspects	Standard CTA design elements can be incorporated	Standard CTA design elements can be incorporated	Both stations are equal
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On balance, Oakton is superior to Crawford as a proposed intermediate station site. While the capital costs for the Oakton station would be higher, it is possible to reduce the design and construction costs (by eliminating the auxiliary entrance at Searle, reducing the platform length, etc.) and can be addressed in a future phase of this study. The Oakton station site also has greater, long-term development potential.

Based on the analysis of the proposed new Yellow Line intermediate stations, the proposed Oakton station is recommended to be carried forward towards implementation. This site is expected to have reasonable ridership potential for a suburban location and would provide improved accessibility and mobility options for downtown Skokie and the surrounding community. The Oakton station site also has greater, long-term development potential, with the ability to attract transit supportive development compared to the other intermediate station sites that were examined.

### Oakton Street Station Area



## **OLD ORCHARD ROAD EXTENSION ANALYSIS**

In addition to intermediate station(s), the feasibility of an extension of the Yellow Line from Dempster to the vicinity of Old Orchard Road was analyzed.

### **Extension and North Terminal Alternatives**

Eight options for a north extension of the Yellow Line, from Dempster Street to the vicinity of Old Orchard Road, were analyzed in terms of the possible routing and location of the extension's north terminal. The potential alternatives included:

- Alternative A – UPRR right-of-way to Old Orchard Road
- Alternative A1 – UPRR right of way to Golf Road
- Alternative B – North of High School
- Alternative C – South of High School
- Alternative D – Golf Road/shopping center south
- Alternative E – East of Edens
- Alternative F – East of Edens/curve into shopping center
- Alternative G – Single-track loop

The following graphic displays the alternatives, and a table provides a summary and subjective assessment of some issues. The "Ease of Extension to North" category is based chiefly on the proposed orientation of the terminal station relative to a line extension further north. By this measure, those line extensions having the terminal oriented east-west would not be "extendable" without replacement of the proposed terminal station, and line realignment. In a similar context, alternatives F and G, where the line makes a 180-degree turn on approach to the terminal station would similarly require relocation/reorientation of the approach track and the terminal station in order to accommodate extension further to the north.

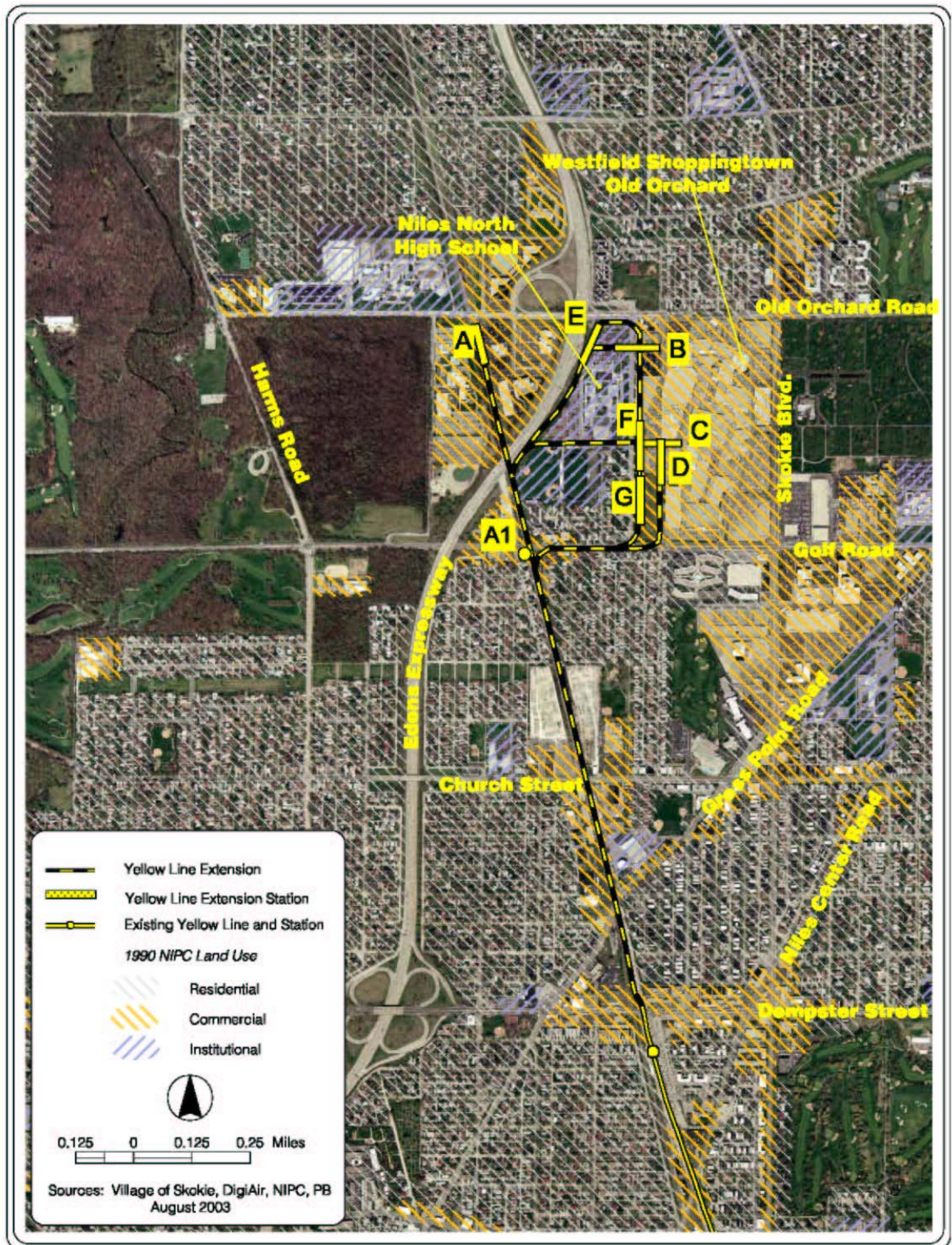
One category not included in the table is an assessment of bus service requirements to connect the proposed terminal location to area traffic generators. Each of the alternatives requires this service to some extent. By this measure alone, the worst-placed terminal station would be in Alternative A1 at the UPRR and Golf Road, since this is remote from virtually all of the potential traffic generators. Alternative E is also sufficiently remote to require bus service to link it to both the shopping center and to the offices and court complex. Each of the alternatives requires bus service to link it to some of the uses in the area. Access can be by dedicated shuttle bus service, by extending or rerouting some services or by coordinating fixed-route service schedules to provide convenient service frequency. All options will require some pedestrian infrastructure improvements for connections to the area land uses.

### **Summary Assessment of Alternatives**

<b>Alt.</b>	<b>Length from Dempster St. (miles)</b>	<b>2030 Estimated Population and Employment</b>	<b>Accessibility /Visibility from Edens</b>	<b>Displaced Parking: Commercial</b>	<b>Displaced Parking: NNHS</b>	<b>Ease of Extension to North</b>
<b>A</b>	1.6	11,220	Good	No	No	High
<b>A1</b>	1.1	--	Poor	No	No	High
<b>B</b>	1.8	8,960	Fair	Yes	Yes	Low
<b>C</b>	1.7	9,290	Fair	Yes	No	Low
<b>D</b>	1.6	9,590	Fair	Yes	No	High
<b>E</b>	1.6	10,530	Excellent	No	Yes	High
<b>F</b>	2.0	10,190	Fair	Yes	Yes	Low
<b>G</b>	2.4	--	Fair	Yes	Yes	Low



## Extension and North Terminal Alternatives



### Land Use

The Old Orchard Road area includes a number of destination sites. A primary destination site is the Westfield Shoppingtown Old Orchard retail complex of about 100 acres, which includes a number of high-end anchor stores. In addition to the shopping center, there is other retail located to the south and east of the Old Orchard complex.

Besides the retail uses, there are a number of employers and other high activity sites in the area. Niles Township High School North and the Cook County Circuit Court are nearby. There are a number of multi-story office buildings. To the west is Harms Woods, part of the Cook County Forest Preserve system. The communities of Glenview and Wilmette are to the north and within the half mile station area.

From Dempster to Gross Point, residential use is predominant to the east of the rail corridor (separated by the station parking lot), while to the west the land immediately abutting the rail right-of-way is commercial, with residential usage further west of that. Between Gross Point and Church, and for approximately one-quarter mile north of Church, land use on either side of the rail right-of-way is commercial, industrial and institutional. Between Emerson and Golf Road, the area on either side of the rail line is residential in nature. There is a small band of commercial development on either side of Golf Road, which transitions to residential and then institutional uses to the east of the right-of-way. Remaining on the rail line north of the Edens Expressway, commercial uses border the right-of-way.

### **Vertical Profile Alternatives**

Vertical profile options – at-grade, open cut (below grade), aerial structure and embankment/retained fill – were considered for the north extension of the Yellow Line, from Dempster Street to the vicinity of Old Orchard Road. Combinations of these alignment profiles are also possible. The choice of vertical profile for the extension is between continuing with the at-grade alignment or grade separating the line. General social, environmental, operating, and cost considerations are presented in the discussion of these options.

CTA design criteria were used in analyzing the vertical profile options for the extension profile. One CTA criterion specifies that the maximum grade should not exceed 4%, outside of station platforms and yard storage tracks. Therefore, for an aerial alignment 20 feet above (or a depressed alignment 20 feet below), the approach grade must begin 500 feet in advance of the point where the rail is to be at this elevation. On the Yellow Line extension, all of the road crossing-to-road crossing distances (for example, between Dempster Street and Gross Point Road) are greater than this 500-foot dimension, making it possible to accommodate a change in the rail line's profile without impacting either of the adjacent road crossings.

To conform to CTA design criteria, construction of a grade separation at Dempster Street would require that the approach grade begin within the limits of the existing station. This means that a new station house and platforms might be required at Dempster Street, should it be decided to grade separate this crossing. Even if the line were to remain at-grade through this location, the station would require substantial reconstruction due to the short platform lengths and other issues.

Each of the alternative profiles will have to consider utilities, both paralleling as well as crossing the path of the extension. In this context, the aerial structure, embankment and retained fill options could be expected to have the greatest impact on buried utilities. The embankment option would have the most impact on aerial utilities, given that its footprint at grade level would be broader than any of the other alignment profiles.

The following matrix, although subjective in the assessment, summarizes the key aspects of the alignment profiles. The “noise”, “aesthetics”, “traffic” and “safety” classifications are an assessment of the impacts of the rail line on the surrounding area. In the case of the “utilities” classification, this reflects the impact the rail line's construction would have on the area utility installations. The “cost” classification reflects the anticipated cost to construct the alignment.



### Comparison of Profile Alternatives

Impact	At-Grade	Open Cut	Aerial Structure	Embankment
Noise	Medium	Low	High	Medium
Utilities	Low	High	Medium	High
Aesthetics	Medium	Low	Medium	High
Traffic	High	None	None	None
Safety	High	Medium	None	Medium
Cost	Low	High	Medium	High

In addition to the above vertical profile alternatives, underground subway is also a possibility. Subway sections would minimize impacts (except for construction impacts) in sensitive areas. However, construction costs for subway sections are very high, and are generally considered cost prohibitive (except for short sections) in suburban areas such as the Village of Skokie.

### Right-of-Way Requirements

CTA design criteria specify that the required clearance in non-boarding areas for a double-track rail line is 25 feet-6 inches. This requirement does not presume the right-of-way alignment profile. If the proposed extension is grade separated (either above or below street level), there will be additional right-of-way requirements for retaining walls or for an aerial structure. If the proposed extension is run at grade, there will be some additional right-of-way requirements in the vicinity of grade crossings. If entirely at grade, there would be four new grade crossings: Dempster, Gross Point, Church and Golf. At each grade crossing, gate/flasher mechanisms are located outside the dynamic envelope [clearance] of the train. If the gates are located 15 feet from the adjacent track centerline, the right of way width at a grade crossing would be on the order of 45 feet-6 inches.

At crossovers, the right-of-way must widen out to include clearance around signal relay houses (55 feet long by 10 feet wide), switch machines (approximately 10 feet) and interlocking home signals. Relay houses are required approximately every mile, so between two and three relay houses will be needed for the proposed extension. Traction power substations, each with a required approximate one-mile spacing, are also needed. The footprint for a substation and associated transformer yard, with an allowance of 10% for clearance around the building/yard and access to the site, will be on the order of 35,000 square feet. A 1.6-mile extension would require a maximum of two substations.

In determining right-of-way availability for the proposed extension, the Village provided maps, marked to show land ownership. Given current ownership and land use configurations, to provide a tangent alignment for the CTA extension north from Dempster, a portion of ComEd land will have to be used to link the CTA alignment to the UPRR alignment on the old North Shore Line right-of-way.

From Greenwood Avenue to south of Gross Point Road, the UPRR's land holdings are separated by a strip of ComEd right-of-way. The wider UPRR strip measures about 30 feet across and could accommodate a double-track transit line, exclusive of any structural arrangements (retaining walls, elevated structure, etc.) or other installations (grade crossing gates, relay houses, etc.). The ComEd strip to the west of it is approximately 15 feet in width. The west strip of UPRR is about 25 feet wide, but does not extend north of Gross Point.

To accommodate additional uses in this corridor would require an agreement on shared usage with ComEd. This is similar to an arrangement originally used by the North Shore Line and the utility when this right-of-way was first acquired. The two entities (then under the control of one owner) granted each other "cross rights" of purchase in the event that one or the other abandoned their respective uses. This right was carried forward when the C&NW bought the North Shore Line right-of-way in 1964. The utility's holding to the east of the UPRR strip is about 100 feet wide.

North of Church Street, the UPRR ownership comprises a 30-foot wide strip, surrounded by ComEd holdings. This right-of-way would be sufficient for a double-track transit line, but any other installations would require easement to or acquisition of ComEd-owned property. The same situation is found between Golf and Old Orchard roads.

If a new terminal station is built at Old Orchard Road and the UPRR right-of-way (alternative A), some utility facilities would need to be relocated. However, a terminal station at this location, along with other facilities (bus interchange, park-and-ride), would require considerable land requiring much of the area to the east of the UPRR to be cleared.

In summary, in no instance is the UPRR land holding of sufficient width for anything other than a “plain” double-track transit line. All relay houses, traction power substations, passenger stations and associated facilities will have to be located on land owned by others. The extent of these additional land requirements cannot be accurately determined until further study is conducted, in order to know the profile (at-grade, subterranean, or aerial) alignment configuration for the proposed extension. The use of ComEd right-of-way for some of the ancillary facilities required for a complete, functional extension of the Yellow Line must also be determined in more detailed studies.

In a similar context, the exact routing of an alignment into or near the Westfield Shoppingtown Old Orchard retail center and the right-of-way requirements will need additional study.

With an extension of the Yellow Line, the existing Dempster terminal becomes an intermediate station. Construction of the extension may require temporary relocation of the station (especially if Dempster Street is grade-separated). If required, there are several possible locations for the temporary station. A permanent station would follow CTA design criteria with a minimum 18-foot wide, center platform station and 520-foot length required at this location. It is assumed that the new station could be built on existing CTA-owned land, therefore pre-empting the need for additional right-of-way.

### **Ridership Projections**

The 2030 ridership projections for the proposed Yellow Line extension are 1,900 to 2,300 boardings per average weekday at the new Old Orchard terminal station. These extension ridership projections assume a new intermediate station at Oakton or Crawford. It is anticipated that the Dempster Street station would show a ridership decrease of approximately 40% with the proposed extension. This diversion of riders from the Dempster station reflects the northerly orientation of the Dempster station users that would be diverted to a new station in the vicinity of Old Orchard Road.

Ridership forecasts for the individual north terminal station extension alternatives were not developed. Ridership projections for these alternatives would somewhat mirror the relative station area population and employment levels for the station areas. However, actual ridership projections will also be influenced by the convenience or ease of access to the alternative station sites. At this early stage, the ease of access to each station for pedestrian, auto, and bus/shuttle service is an unknown as these factors depend on the configuration of the station site.

Overall, 1,900 to 2,300 boardings on an average weekday show relatively strong demand for a station outside of downtown Chicago. These boardings are comparable to that of other CTA suburban terminal stations. From the November 2002 ridership report, the Linden/Evanston station (Purple Line) had 1,070 weekday boardings, and the Harlem/Lake station (Green Line) had 1,900. At the high end, the Forest Park/Congress station (Blue Line) had 3,750 weekday boardings. An Old Orchard Road station would fall in between this range. The Forest Park station has a very high level of accessibility, with both bus routes and high volume roads. Accessibility to a station at Old Orchard Road may be somewhat less than that of Forest Park, but is likely to be higher than that of Linden or Harlem.

### **Vehicle Requirements**

Car requirements for several different operating plan scenarios were developed and car requirements for the various operating plan alternatives were compared to the existing Yellow Line requirements.

- Shuttle with intermediate station and line extension
- Peak period express service to the Loop via elevated
- Peak period express service to the Loop via subway

### Comparison of Operating Plan Car Requirements

Operating Plan	Peak Car Requirements	Spare Cars	Spare Ratio
Current	8	2	25%
Shuttle with intermediate station and extension	12 to 14	2 to 4	17 to 29%
Peak express to Loop via elevated	72	14	20%
Peak express to Loop via subway	78	16	20%

The higher spare requirement for the shuttle operations is necessary due to the fact that all CTA cars are married pairs and that the total number of cars assigned to provide the service is small.

Yard capacities for the increased fleet size are a consideration. Yellow Line cars are currently stored and maintained out of Howard Yard, which also is responsible for cars assigned to the Purple and Red Lines. The other yards with responsibilities relative to these two lines are Linden (Purple Line) and 98<sup>th</sup> Street (Red Line). The CTA railcar assignment sheet that went into effect at the end of February 2003 was reviewed to determine the total number of cars currently assigned to these lines.

Since Purple and Red Line cars are assigned out of two facilities, some simplification has been made in the following chart. All Purple Line cars are listed as if assigned out of Linden Yard, when in fact they are divided between Howard and Linden. Similarly, the Red Line cars are shown as if divided half and half between Howard and 98<sup>th</sup>. This was done to allow the table to reflect the total cars assigned and then to project the available capacity between the three yards. Comparing the available capacity to the theoretical Yellow Line requirements, it can be seen that all the operating plan car requirements can be accommodated within the available capacity of these yards. To accommodate as many Yellow Line cars as might be required for the through Loop Express service (using six-car trains) at Howard Street might require some changes in Purple and Red Line car assignments/schedules compared to what is now in effect.

### Comparison of Yard Capacities and Line Requirements

Yard	Total Capacity	Line Assignment	Available Capacity	Remarks
Howard	282	190	92	Assignment shown as if ½ Red and all Yellow
Linden	76	98	-22	Shown as if all Purple cars at this yard; some are at Howard
98 <sup>th</sup> Street	234	180	54	Shown as if only ½ Red assigned here
<b>Total</b>	<b>592</b>	<b>468</b>	<b>124</b>	

Alternatively, if it were necessary to run eight-car trains on the Yellow Line Loop Express trains, the car requirements for this expanded service would consume most all of the available capacity at these yards, without allowing for any Purple or Red Line expansion. It might be necessary to transfer the Yellow Line assignment to either a new facility on the line, or to begin using CTA's Skokie Shops as a running repair and/or storage facility.

In summary, the projected car requirements for the proposed Yellow Line extension can easily be accommodated within the available capacity at Howard Yard.

### Traction Power Requirements

The existing Yellow Line is fed from three substations: Calvary, Hamlin, and Skokie. In discussions with CTA, the following changes would be required to support the line extension on the Yellow Line:

- One new substation of 5000 KW capacity
- Skokie substation would require considerable reconstruction and expansion (including the installation of a second 2500 kW unit)

- Hamlin substation is a comparatively new facility (having been built and put into operation in the late 1990s). However, to support expanded Yellow Line service, it would require relocation of the DC switchgear to facilitate installation of a second 2500 kW unit)

The CTA estimated that these changes would be required to support six- or eight-car train operation, necessary for peak period Loop express service. Without this operational change, the extension would require only the new substation.

## **Conceptual Plans**

### Dempster as an Intermediate Station

Based on ridership projections, as long as the Yellow Line continues to operate as shuttle service to Howard, the existing two-car operation could be maintained. With this, the Dempster Street station would not necessarily have to be rebuilt (assuming an at-grade alignment profile for the extension north) until either through Loop express train operation begins or in response to increased ridership demands.

With a northbound extension, the current Dempster station layout is not suited to the handling of boarding northbound riders. Constructing a second track north through the station site would impact the proposed relocation of the bus facilities to the east of the present tail track. With the extension, it will be important to address the issues at Dempster by building a new station to accommodate longer-length trains, as well as support bi-directional ridership demands.

Should it be decided to construct the extension other than at-grade, construction of the ramp up or down would require demolition of the existing station and construction of a replacement facility.

### Old Orchard Road Terminal Alternatives

The nature of the terminal facility depends on the alignment and profile to be used on the extension. All north terminal alternatives include a two-track station with an island platform. Except for Alternative G, the other alternatives would make provisions for a third track to improve headways as demand warrants. For Alternative G, (a probable subway, loop arrangement for the north terminal), CTA input on this terminal facilities suggested a two-track terminal station with an island platform. Bus terminal capacity for each of the north terminal alternatives was based on providing one bay for each route currently serving Westfield Shoppingtown Old Orchard, plus expansion.

### Alternative A – UPRR Right-of-Way

Land use around the proposed terminal location is entirely commercial. Development to the north of Old Orchard Road is also present on either side of the UPRR right-of-way. However, the area immediately east of the UPRR track is currently vacant. This land is proposed for the north parking lot to provide a total capacity of around 600 spaces.

The conceptual station designs have many similarities to the existing Dempster Station layout. The alternatives provide parking lots adjacent to the terminal facility and across Old Orchard Road. The capital costs for flat lot and structured parking are based on providing 600 spaces, a capacity similar to that at Dempster Street, along with the assumption that most of the parking facility at Dempster will remain in service, even after the extension is implemented.

The parking capacity immediately adjacent to the station is constrained, due to limited available land. This led to another concept which incorporated a multiple-story parking facility on top of the station. This concept offers the advantage of increased parking capacity in immediate proximity to the station, as well as shielding the terminal operations from inclement weather.

## Alternatives B through G – East of Edens Expressway

Land use surrounding each of these alternatives is a mixture of institutional (Niles North High School) and commercial (the shopping center and adjacent offices). There is also a residential area along Golf Road and to the east of the UPRR right-of-way. The east limits of this area front Lawler Avenue.

Design concept B is applicable in principle to Alternatives B through G. Concept B assumes an elevated alignment profile for the north terminal and associated approach trackage. As the terminal approach and facilities will displace existing parking (either at the high school or at commercial property) this alternative identifies “replacement” parking capacity as well as that for CTA employee and rider use. The capacity shown is indicative of what can be provided, and the structure would be designed for potential expansion. Cost estimates are based on 600 transit patron spaces, as well as including “replacement” parking for the commercial affected by the terminal.

The sample concept shows the use of skybridges to facilitate connections to adjacent stores/offices. If a subterranean approach and terminal were to be used, these connections could be made by underground walkways. It is expected that circulation details (tie-ins to the surrounding road network, etc.) would be developed in a future phase of the engineering effort.

### **Capital Costs**

Detailed cost estimates were prepared for Alternative A (remaining on the UPRR right-of-way) for the at-grade, below-grade (open cut), subway and aerial structure alignment profiles. Unit prices per mile for each of these profiles are then derived. These alignment profile unit prices were applied to Alternatives B through G, as well as to the combinations of alignment profiles that might be possible for the extension. This leads to the identification of a range of costs per alternative.

## Dempster Street Intermediate Station

The concept design plans show at-grade and above-grade station designs for Dempster. The basic station concept (island platform, etc.) could also be applied to a below-grade station, whether in open cut or subway. In addition to the costs for the construction of the final station, an allocation must also be made for the construction of a temporary terminal station to be used during the construction of the replacement facility.

The estimated cost for the temporary facility requires some comment. CTA’s updated information (received in August 2003) indicates that the new station at Kedzie on the Brown line has an estimated total cost of \$4 million, quite different from the estimates provided by CTA in 2002. It is proposed that the temporary station cost allocation of \$5 million be retained at this time, but that it can be refined during a future phase of the study.

Using the 16% design/construction management allocation, the cost range for design and construction management is between \$3.3 and \$5.4 million for this station. The totals also include a 30% contingency, so the range for this allocation would be from \$6.2 to \$10.2 million. The total costs for the demolition, temporary operations and new construction work at Dempster are, by profile:

**Dempster Station Cost Comparison (In Millions)**

<b>Cost Element</b>	<b>At-Grade</b>	<b>Open Cut</b>	<b>Aerial Structure</b>	<b>Subway</b>
UPRR ROW acquisition	\$0.6	\$0.6	\$0.6	\$0.6
Temporary terminal construction	\$5.0	\$5.0	\$5.0	\$5.0
Demolish existing station	\$0.4	\$0.4	\$0.4	\$0.4
Design and construct new station	\$14.5	\$18.0	\$20.0	\$26.0
<b>Total</b>	<b>\$20.5</b>	<b>\$24.0</b>	<b>\$26.0</b>	<b>\$32.0</b>

DLK Inc. provided an order of magnitude cost for design and construction of the new Dempster aerial station. Their estimate, including the design/construction management allocation and the contingency is that this facility would cost approximately \$18 million. This corroborates the above estimate of \$20 million.

Alternatives A-G

Conceptual cost estimates for the various alignment profiles (at-grade, open cut, aerial structure and subway) were developed for Alternative A. The preparation of these estimates included review of ComEd drawings for above- and below-ground installations, review of UPRR high-range price estimates for the acquisition of the railroad's right-of-way north of Dempster Street, and the review of unit price data for application to this project.

Total cost by alignment profile for Alternative A was developed, and then unit prices by alignment profile were calculated.

**Range of Costs (in Millions of Dollars) for Alternative A (UPRR ROW, 1.6 miles)**

<b>Alignment Profile</b>	<b>Total Cost (excluding terminal station)</b>	<b>Unit Price/Mile</b>
At-grade	\$72.9	\$45.6
Open cut	\$137.6	\$81.0
Aerial structure	\$137.5	\$80.9
Subway	\$190.3	\$111.9

When all cost elements are considered (Oakton intermediate station, impacts on Dempster station, traction power improvements, additional cars and the cost of the construction of the extension) the results are shown below. The lowest-cost in the range will result when the at-grade alignment is applied where practical. The highest range of costs for each of the various alternatives results when the subway alignment is used.

**Range of Costs for Alternative (Millions)**

<b>Alternative</b>	<b>Length from Dempster St. (miles)</b>	<b>Range of Estimated Cost</b>
A	1.6	\$154 to \$289
B	1.8	\$228 to \$301
C	1.7	\$220 to \$289
D	1.6	\$219 to \$278
E	1.6	\$212 to \$278
F	2.0	\$245 to \$323
G	2.4	\$250 to \$320

## Operations and Maintenance Costs

Based on CTA data, operating and maintenance (O&M) costs for a new station in 2003 dollars is approximately \$1,220 per day. With 250 weekdays per year, the annual cost of a new terminal station would be \$305,000; operating year round, the total annual outlay would be \$445,300.

Projected ridership for the extension will warrant an increase in peak period train service, compared to the current operating plan. The one-way line length will increase to 6.7 miles (on average). With the extension, peak period service will increase to 22 round trips, or an addition of six trips per peak, 12 one way trips per day. The extension will add \$0.8 million for 250 weekdays of operation to current service O&M costs. If the extended service operates 365 days per year, the additional cost over the current service would total \$2.0 million.

In total, O&M costs for the extension and new terminal station are:

- For service 250 days/year: \$1.1 million
- For service 365 days/year: \$2.4 million

Discussions relative to bus route changes as a result of the proposed intermediate station or the extension of the Yellow Line north to Old Orchard Road have not occurred. A future study will need to address revisions to the bus O&M costs.

## Evaluation and Recommendation

At the request of the Westfield Shoppingtown management, the alternatives that would use shopping center property to locate the terminal and ancillary facilities were dropped from further consideration. The shopping center is already constrained, in parking capacity and the ability to support other uses. This is especially true at times of peak shopping demand. Accordingly, Alternatives C, D, F and G are eliminated. However, it is appropriate to note that consideration of the alternatives recommended for elimination may be reversed (for other reasons) in a subsequent phase of this study.

Three alternatives – A, B and E – are recommended to be carried forward. Discussions with School District 219 (Niles North High School) also showed support for these options. Additional analysis was done on these three alternatives. The table below compares the results of the factors evaluated for the alternatives in this study.

<b>Evaluation Factor</b>	<b>A</b>	<b>B</b>	<b>E</b>	<b>Remarks</b>
Connections to other transit service	Equal	Equal	Equal	Location, alignment profile may affect schedules
Proximity to traffic generators	Cook County Court house, other office buildings	Niles North, Old Orchard (best in terms of access to north end of shopping center)	Niles North, Old Orchard	Supporting bus services important for connections along Old Orchard
Access considerations	May require signal for Old Orchard cross traffic; pedestrian access to offices needed	Lawler for vehicle entry; pedestrian environment will need to be improved	Lawler for vehicle entry; pedestrian environment will need to be improved (most visible from Edens)	I-94 (Edens Expressway) will be a significant barrier to land uses on the other side unless pedestrian environment is addressed
Capital costs	\$154M-\$289M	\$228M-\$301M	\$212M-\$278M	Conservative estimates; depends on alignment profile
O&M costs	+\$1.1M annual	+\$1.1M annual	+\$1.1M annual	Equal (all exclude O&M cost for intermediate sta.)



Potential ridership	1,900-2,300 boardings	1,900-2,300 boardings	1,900-2,300 boardings	Must be refined
Development potential	Some opportunity	Greater Opportunity	Mid-range Opportunity	Redevelopment to higher densities possible at all locations, greater potential to east of expressway
Congestion impacts	Equal	Equal	Equal	Depends on alignment profile
Land use/ compatibility	Equal	Equal	Equal	Concern about residential real estate values along alignment; depends upon profile
Safety aspects	Standard CTA design elements can be incorporated	Standard CTA design elements can be incorporated	Standard CTA design elements can be incorporated	Preventive measures can be applied at station sites

Of the alternatives, A offers the best access to the locations to the west of the expressway, while B could serve to stimulate commercial traffic at the north end of the Old Orchard shopping center and E would have the best visibility in terms of attracting motorists off the Edens Expressway. It is noted that the greater potential for redevelopment lies to the east of the expressway, favoring Alternatives B and E.

From a capital cost standpoint, extending the line north using an at-grade alignment will result in the lowest design and construction costs. However, at-grade crossings at Dempster Street and Golf Road must be considered from the perspective of safety (train, motor vehicle and pedestrian), traffic impacts and other considerations. Additional questions on safety and traffic impact concerns were noted for the Gross Point Road and Church Street crossings, particularly related to school children crossing safety at Church Street.

For the alignment profile, Alternative A could remain at-grade all the way into and including the terminal station at Old Orchard Road. However, this is not practical for Alternatives B and E. In those cases, the terminal station must be on aerial structure. For the aerial guideway, there are issues of aesthetics and noise control that would have to be addressed in order to increase acceptability. Combinations of profiles for the north extension of the Yellow Line to Old Orchard Road should also be considered.

Lastly, Dempster Street is a Strategic Regional Arterial (SRA), which means that application to cross it at grade must be reviewed by the Illinois Commerce Commission (ICC), as well as the Illinois Department of Transportation (IDOT). This review process will be lengthy, with the potential for the two entities to deny the at-grade crossing.

### **PUBLIC INFORMATION MEETING**

A public information meeting was held in the Village Hall (Council Chambers) on June 26, 2003. It presented an opportunity for the public to view and comment on the planned improvements for the CTA Yellow (Skokie Swift) line. About 50 persons attended the public meeting, including a mix of area residents, business owners and representatives of various agencies. Following a brief presentation by the project team, about a dozen attendees took the opportunity to clarify the information and provide comment.

The intermediate station at Oakton received almost totally positive comments. Concern was expressed relative to the number of projected riders and the costs, both capital and operating, for the intermediate station and the line extension. There was further concern about the ability of Old Orchard Road to accommodate additional vehicular traffic. Concern was expressed with regard to the extension's alignment profile and impacts on the surrounding neighborhood, including safety, noise and housing values. Explanations of the ridership forecasting, costing, and implementation

process were also provided. In summary, the verbal comments were fairly evenly split between the supportive and the negative regarding the extension.

## **CONCLUSION AND NEXT STEPS**

Based on the analysis of the proposed new Yellow Line intermediate stations, the proposed Oakton station is recommended to be carried forward towards implementation. This station is expected to have reasonable ridership potential for a suburban location, would provide improved accessibility for downtown Skokie and the surrounding community, and has the greater, long-term development potential, with greater ability to attract transit supportive development than any other of the alternative intermediate station sites that were examined.

For the extension, three alternatives (A, B and E) are recommended for further study in a succeeding phase of this effort. Of these, A offers the best access to the locations to the west of the expressway, while B could serve to stimulate commercial traffic at the north end of the Old Orchard shopping complex and E would have the best visibility in terms of attracting motorists off the Edens Expressway. It is also noted that the greater potential for redevelopment lies to the east of the expressway, favoring Alternatives B and E.

An outline of items necessary to advance this project to the next phase was prepared. Different procedures will apply depending on if the Village of Skokie chooses to pursue only the new intermediate station at Oakton, or in addition, the extension from Dempster to the vicinity of Old Orchard Road.

### **Oakton Station**

With the 2002 STB action on the UPRR and Village of Skokie requests regarding the UPRR's disposal of the corridor from Dempster to Oakton, the Village of Skokie should pursue negotiations with the railroad. In addition, with the closure of the Pharmacia properties, the Village should continue monitoring and reviewing any future development proposals for the site and attempt to negotiate public/private partnerships with the buyer that would facilitate new transit service at Oakton.

Because the proposed Oakton station is an intermediate station along an existing service, the implementation process has fewer steps than the process for the extension. In addition to preliminary engineering, final design, and system/schedule planning, funding and land use compatibility should be pursued. In the case of funding, the CTA will need to be a willing partner in the implementation of this station. There are a variety of funds (Section 5309, STP, CMAQ, other federal earmarks, future state funding programs, joint development, public/private partnerships, etc.) that can be used for this station but there will be a need to show that this station is a priority project for the CTA in a financially constrained environment.

For land use, the Village of Skokie should require that the nearby land uses to the proposed Oakton station are transit supportive. This may require changes to the Village of Skokie's zoning code to allow mixed use buildings, lower parking requirements for commercial or residential uses, or changes to the mix of allowed development types in the station area. The Village of Skokie is currently undertaking a Downtown Land Use Study that will examine these issues and ensure a strong transit supportive environment.

In all cases, it will be important to ensure public involvement in all steps of the planning process to ensure continuing support for the proposed Oakton station.

### **Old Orchard Road Extension**

In the July 15, 2003 Draft for Work Program Committee Review of the CATS 2030 Regional Transportation Plan, the Yellow Line enhancements and extension to Old Orchard Road was included as recommendation in the Improvements to Existing Facilities as a Passenger Rail Upgrade and Extension project.

The extension project will have a longer lead time for implementation. On May 7, 2002 the UPRR applied to the STB to discontinue operations on the 8.06-mile line section north from Dempster Street to Valley Junction in Northfield. The Village of Skokie should continue to monitor STB filings for the ROW. Future preservation options could be explored.

New fixed guideway projects like the extension to Old Orchard represent significant capital investments. Much of the funding for these projects has typically been provided through the Federal Transit Administration's (FTA) Section 5309 New Starts program. However, competition for these funds is very intense. The New Starts Program consists of the conduct of an alternatives analysis, Draft Environmental Impact Statement (DEIS) or equivalent, and is typically developed concurrent with the alternatives analysis. The locally preferred alternative is identified during this process. The FTA then uses criteria to screen project applications. The FTA criteria will need to be addressed to ensure that this project receives the highest favorable rating to ensure federal funding.